PERSONAL PROTECTIVE EQUIPMENT (PPE)

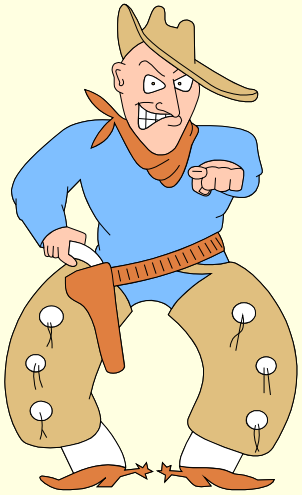
Deb Heise-Clark WSO-CCSS

PPE Responsibilities

- Employers must protect employees from workplace hazards
- Employers must:
  - Use all feasible engineering and work practice controls to eliminate and reduce hazards
  - Then use appropriate personal protective equipment if these controls do not eliminate the hazards.
- REMEMBER – PPE is the last level of control

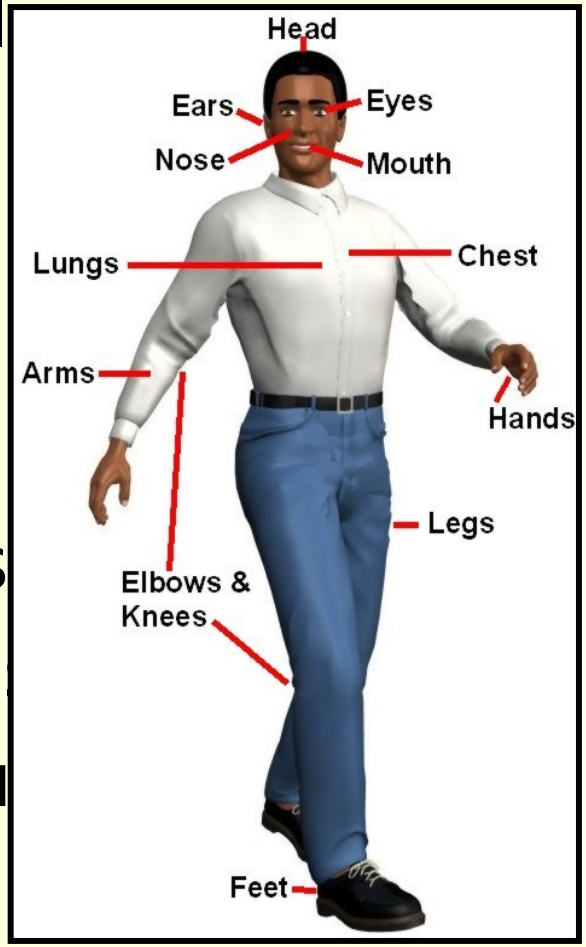
Personal Protective Equipment

- Used for centuries!
  - Medieval knights – armor
  - Blacksmiths – leather apron
  - Cowboys – leather chaps
  - Eskimos - parka



PPE Examples

- Eye – safety glasses, goggl
- Face – face shields
- Lungs – respirators
- Head – hard hat, helmets
- Feet – safety boots/shoes
- Hands – gloves, finger cots
- Special – aprons, knee pad
- Hearing – earplugs and mu



Eye and Face Protection

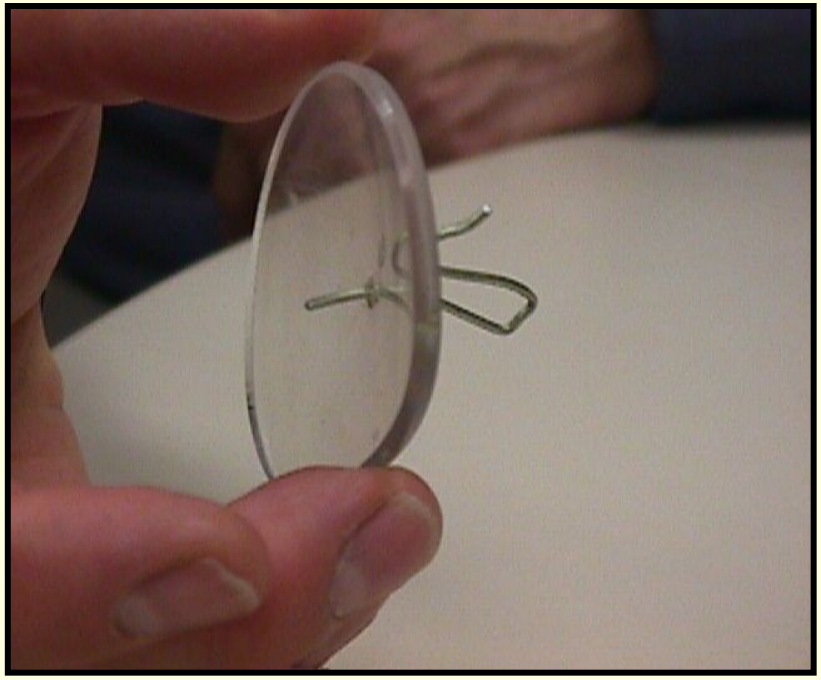
- Potential Hazards
  - Dust, Powders, Fumes, Mist (Grinding, chiseling, sanding, spraying operations)
  - Toxic gasses, vapors, and liquids
  - Flying objects and particles (Grinding, chiseling, sanding, hammering operations)
  - Radiant energy (welding or laser operations)

Personal Protective Equipment

- Safety Glasses
  - Most widely used
  - Stronger than regular
  - Sideshields
  - Prescription and non prescription available
  - Lens coating
  - Z-87 approved

Safety Glasses Work

- A Boeing employee convinced his 18 year old son to wear safety glasses at his construction job. During his second week on the job a staple gun staple ricocheted backwards and ....



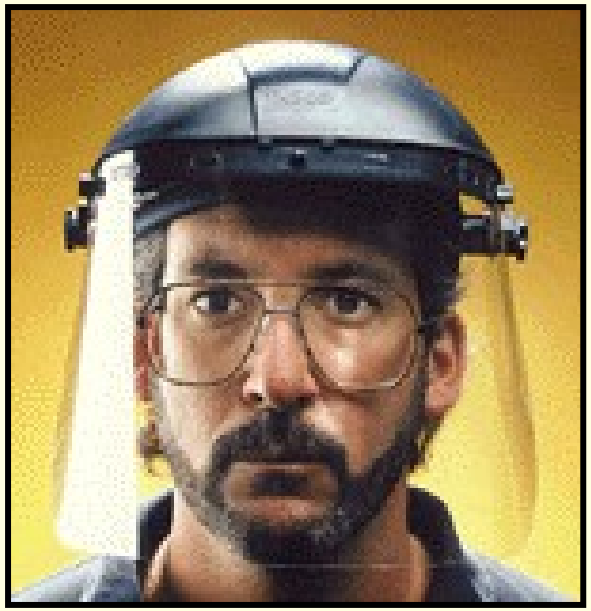
Personal Protective Equipment

- Goggles
  - More protection than safety glasses
    - Splash goggles
    - Dust and Impact

Personal Protective Equipment

- Face Shields
  - Full face protection
  - Operations like molten metal, chemical splashed or fine particles
  - Can be used with hard hat

NOTE: Wear safety glasses with face shield



Personal Protective Equipment

- Welding Helmets
  - Provide face and eye protection
  - Absorptive lenses filter intense light
  - Should be used with safety glasses
- Laser Goggles

Personal Protective Equipment

- Air purifying Respirators
  - Disposable Particulate Masks
  - Half Masks
  - Full Masks
  - Gas Masks
  - Powered Air Purifying

Personal Protective Equipment

- Supplied Air
  - Air line
  - Emergency Escape Breathing Apparatus
  - Self Contained Breathing Apparatus (SCBA)

Head Protection

- Potential Hazards
  - Impact to head
    - Falling or Flying objects
  - Electrical shock
  - Spills, splashes and drips

Personal Protective Equipment

- Class A
  - Protect from falling objects
  - Protect from electrical shock up to 2,200 volts
- Class B
  - Protect from falling objects
  - Protect from electrical shock up to 20,000 volts
- Class C
  - Protect from falling objects
- Z89

Foot Protection

- Potential Hazards
  - Impact injuries
  - Injuries from spills and splashes
  - Compression injuries
  - Electrical shocks
  - Extremes in cold, heat and moisture
  - Slipping

Personal Protective Equipment

- Shoes & Boots
  - Z41
  - Steel toed - falling objects and crushing
  - Metatarsal - entire foot
  - Reinforced Sole - punctures
  - Latex/Rubber - resists chemicals and provide extra traction

Personal Protective Equipment

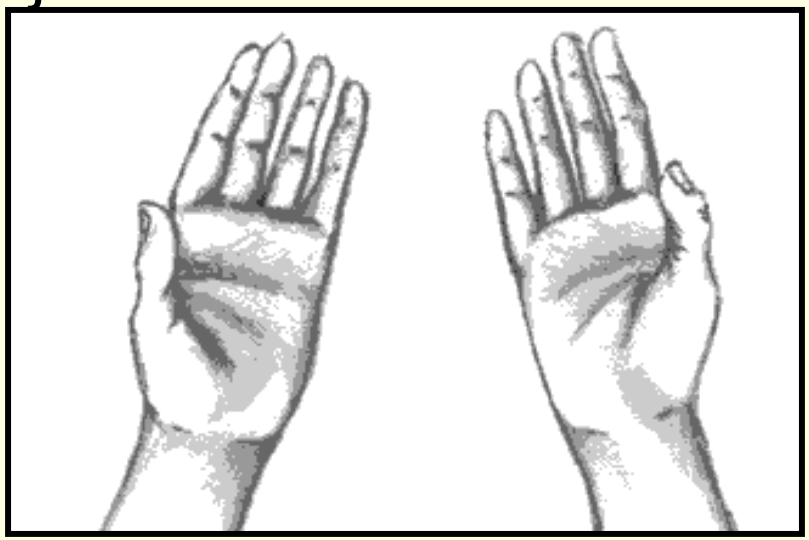
- Shoes and Boots
  - PVC - moisture and improves traction
  - Butyl - ketones, aldehydes, alcohols, acids, salts, alkalies
  - Vinyl - solvents, acids, alkalies, salt, water, grease, blood
  - Nitrol - animal fats, oil, chemicals

Personal Protective Equipment

- Shoes & Boots
  - Electrostatic dissipating - conducts static electricity to floors which are grounded
  - Electrical Hazard - insulated to prevent burns
  - Disposable - used in dust free work areas

Hand Protection

- Potential Hazards
  - Traumatic injuries – cuts, punctures, crush
  - Contact injuries – caustic chemicals, biological substances, or extreme cold or hot objects

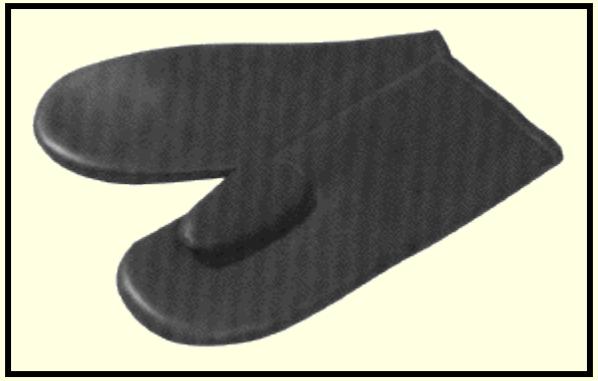


Personal Protective Equipment

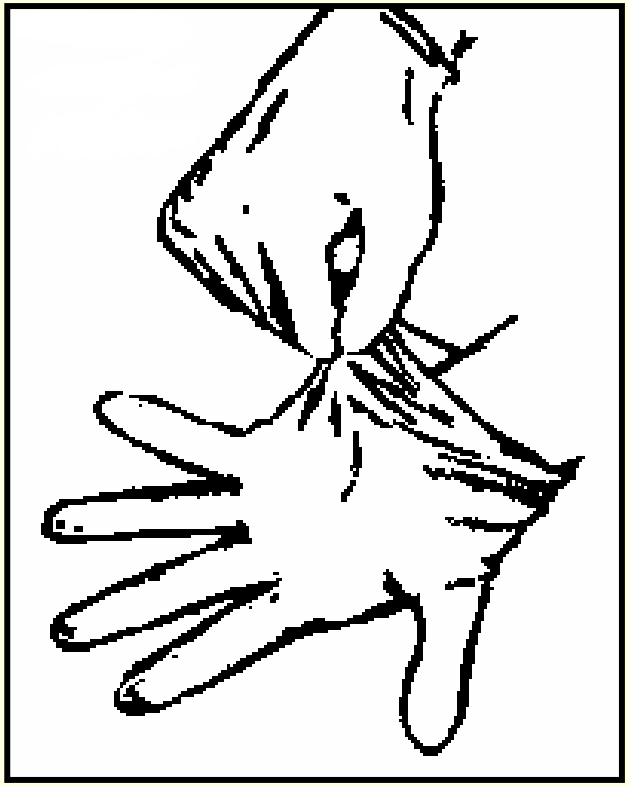
- Gloves
  - Metal Mesh - resist sharp edges
  - Leather - shield from rough surfaces
  - Vinyl and Neoprene - toxic chemicals
  - Rubber - electricity
  - Padded Cloth - slivers, dirt, vibration

Personal Protective Equipment

- Gloves
  - Heat Resistant - heat and flames
  - Latex Disposable - germs and bacteria
  - Lead Lined - radiation sources



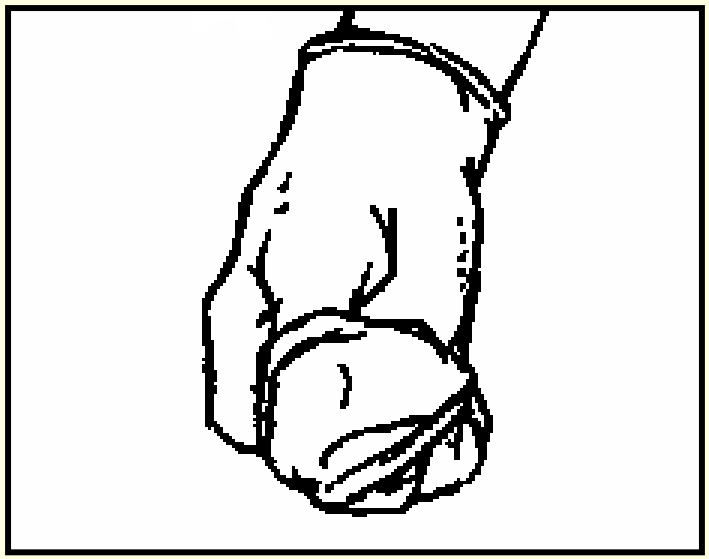
How to Remove Disposable Gloves



- Grasp the outside of one glove

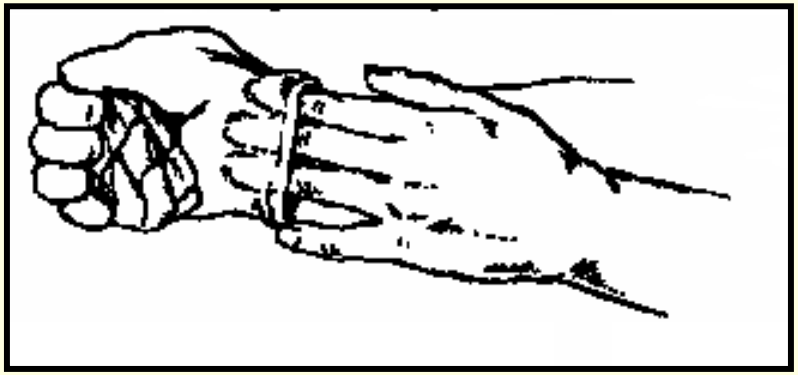
How to Remove Disposable Gloves

- Hold the glove with your gloved hand



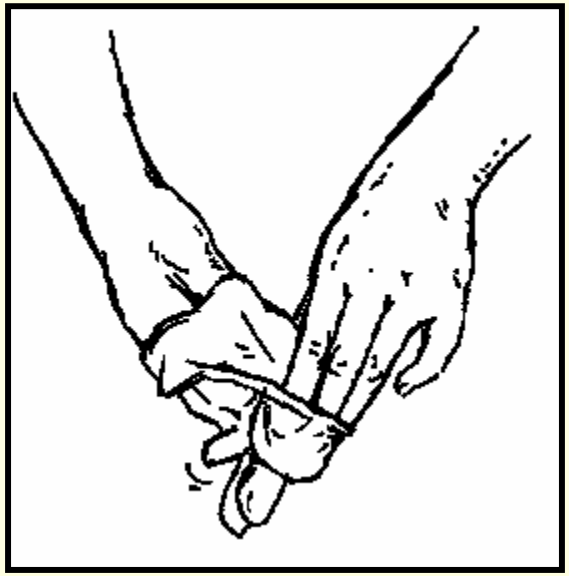
How to Remove Disposable Gloves

- Insert your fingers on the inside of the glove



How to Remove Disposable Gloves

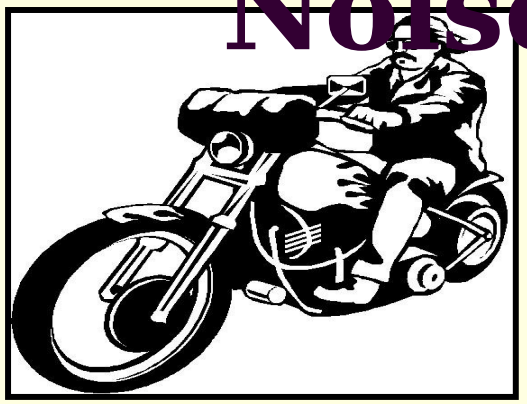
- Turn the glove inside out over the first glove

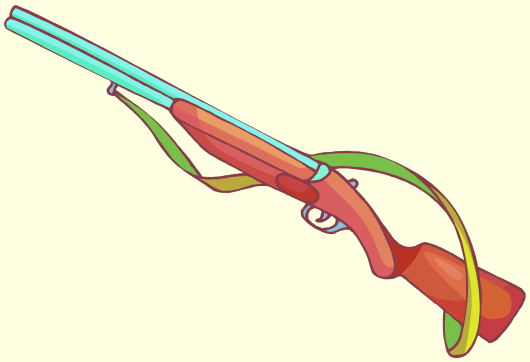


Special Protection

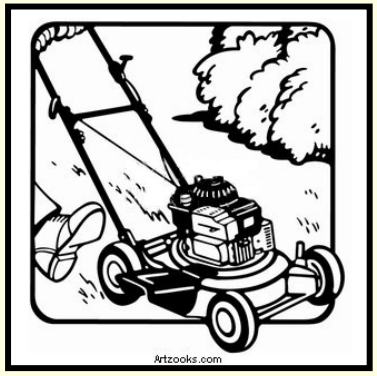
- Finger Cuts
- Forearm cuffs
- Aprons
- Cooling materials
- Reflective vests
- Flame retardant clothing

What is Noise?





Un-wanted Sound

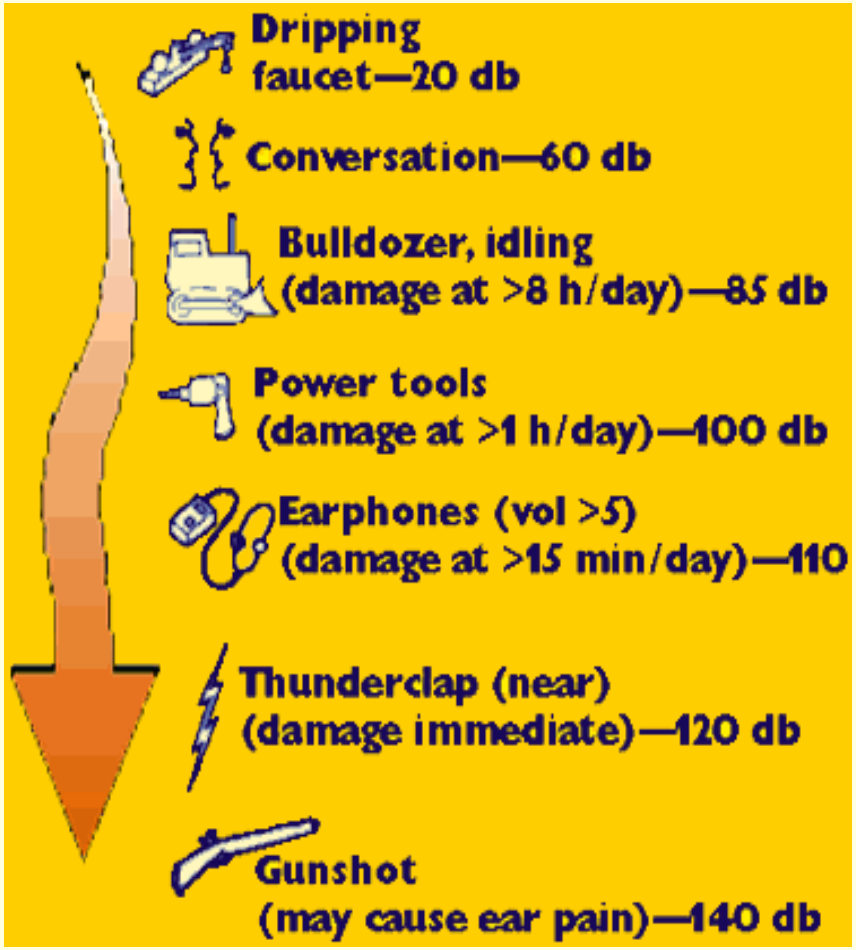


When to Wear Hearing Protection

- Required when exposed to noise which is 85 dBs or greater for a 8 hours period of time. However, the hours decrease when the decibels increase.

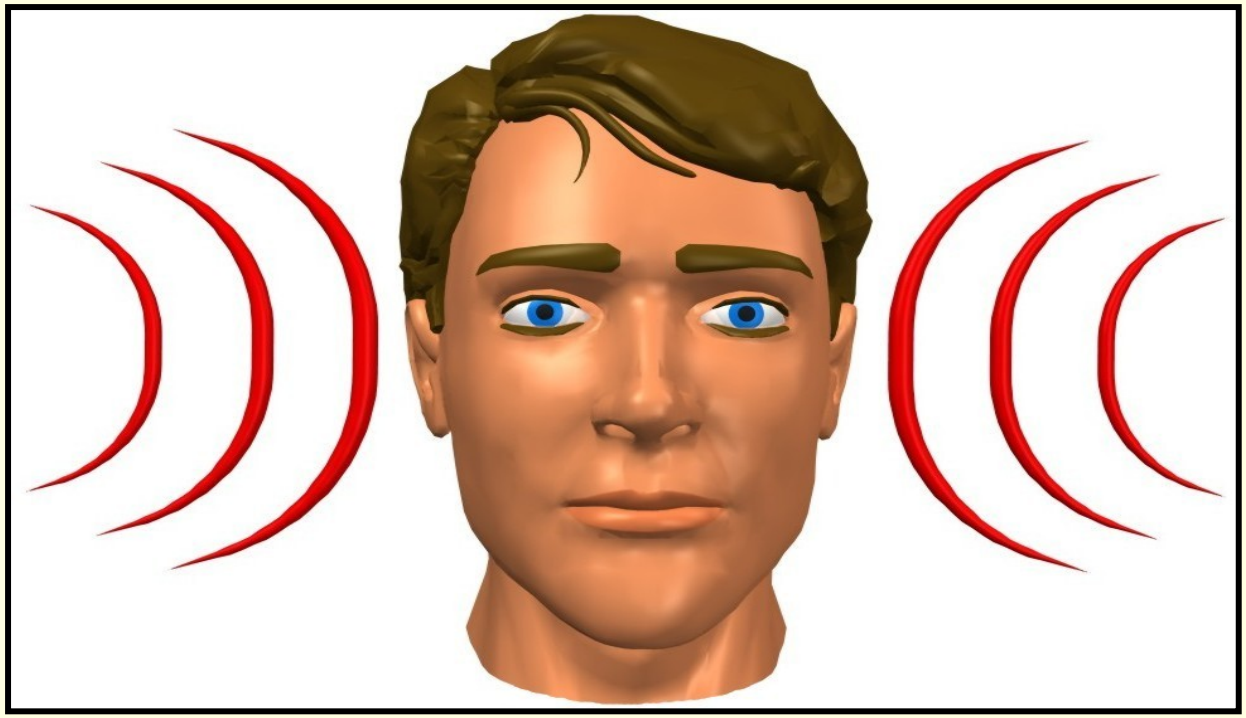
NIOSH recommends:

Duration of Exposure (hrs/day)	Sound Level dB (A)
8	85
4	88
2	91
1	94
1/2	97
1/4	100
1/8	103


Dripping faucet—20 db
Conversation—60 db
Bulldozer, idling (damage at >8 h/day)—85 db
Power tools (damage at >1 h/day)—100 db
Earphones (vol >5) (damage at >15 min/day)—110
Thunderclap (near) (damage immediate)—120 db
Gunshot (may cause ear pain)—140 db

Hearing Protection

What Hearing Loss Sounds Like



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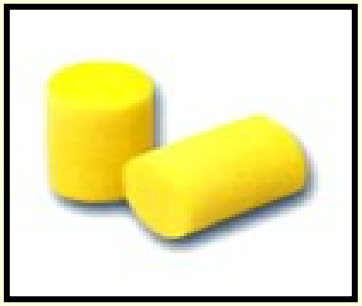
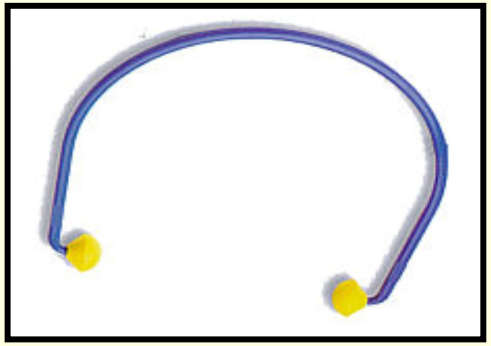
Personal Protective Equipment

Earmuffs



Earplugs

Fingers in the Ears



Canal Caps

Three Steps to Inserting Foam Ear Plugs

STEP ONE: Squeeze the plug along its length and roll it between your thumb and forefinger to compact it down for insertion into the ear canal.

STEP TWO: Do the “Hook n Grab” – Keeping the ear plug compressed and rolled, reach over and behind your head with your opposite hand and gently pull your ear slightly out and back to straighten out the ear canal and make insertion of the plug easier.

STEP THREE: Quickly insert the plug into the ear canal until it is deeply seated. You may have to keep a finger on the plug for a few seconds to let it expand to the size of your ear canal. Do not insert the plug so deeply that you cannot pinch a bit of the plug for removal – practice the insertion a few times in front of a mirror to get familiar with proper insertion depth.

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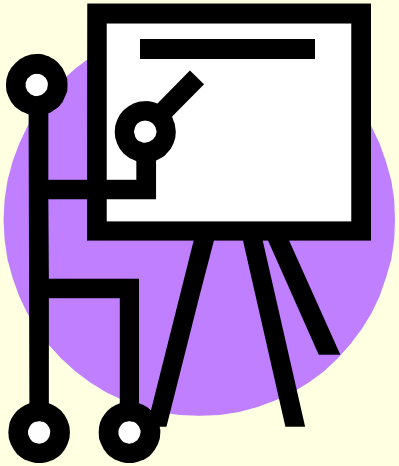
Personal Protective Equipment

- Employees must be trained
  - When PPE is necessary
  - What PPE is necessary
  - How to properly use PPE
  - How to care for PPE
  - How to store PPE



QUIZ

1. If the Personal Protective Equipment used meets ANSI standards the number will be preceded by the letter

   a. A

   b. P

   c. Z

2. All hard hats are made the same

   a. True

   b. False

QUIZ

3. Hearing protection is required if the sound is greater than 80 dBs for 8 hours or more

   a. True

   b. False

4. Which is not an example of a type of glove used as PPE

   a. Latex

   b. Neoprene

   c. Disintegrating

   d. Leather

QUIZ

5. Safety glasses are good to use when conditions are dusty

   a. True

   b. False

6. There are two types of respirators, Supplied Air and

   a. Unsupplied Air

   b. Air Filtering

   c. Air Purifying

   d. Secondary Supplied Air

QUIZ

7. The best protective footwear to wear to prevent a crushing accidents is

   a. Latex/Rubber

   b. Nitrol

   c. Steel toed

   d. Disposable

8. Personal Protective Equipment is a new concept that began when the OSH Act was enacted

   a. True

   b. False

QUIZ

9. An example of a special protective PPE might be

   a. Flame retardant material

   b. Finger cots

   c. Forearm cuffs

   d. All of the above

10. There is no employee training required for PPE

    a. True

    b. False